

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently amended) A method for pacing a heart, comprising:
providing a post ventricular atrial refractory period (PVARP) associated with a
pacing timing sequence;
delivering ~~a bi-ventricular~~ pacing therapy to left and right ventricles using the pacing
timing sequence;
detecting a disruption of ventricular pacing during the pacing therapy;
modifying the pacing timing sequence to restore the ventricular pacing;
~~delivering the bi-ventricular pacing therapy~~ pacing the ventricles using the modified
pacing timing sequence; and
avoiding pacemaker mediated tachycardia ~~during delivery of the bi-ventricular~~
~~pacing therapy~~ while pacing the ventricles using the modified pacing timing sequence.

2. (Currently amended) The method of claim 1, wherein detecting the
disruption of the ventricular pacing comprises detecting a premature ventricular contraction.

3. (Withdrawn) The method of claim 1, detecting the disruption of ventricular
pacing comprises detecting a transient increase in heart rate above a maximum tracking rate.

4. (Withdrawn) The method of claim 1, wherein detecting the disruption of
ventricular pacing comprises detecting one intrinsic atrial depolarization occurring within
the PVARP.

5. (Currently amended) The method of claim 1, wherein detecting the
disruption of the ventricular pacing comprises detecting an intrinsic ventricular
depolarization.

6. (Original) The method of claim 1, wherein modifying the pacing timing sequence comprises adjusting the PVARP.

7. (Original) The method of claim 1, wherein modifying the pacing timing sequence comprises adjusting the PVARP for two or more successive cycles.

8. (Original) The method of claim 1, wherein modifying the pacing timing sequence comprises decreasing the PVARP.

9. (Withdrawn) The method of claim 1, wherein modifying the pacing timing sequence comprises ignoring the PVARP.

10. (Withdrawn) The method of claim 1, wherein delivering the bi-ventricular pacing therapy using the modified pacing timing sequence comprises avoiding pacemaker mediated tachycardia.

11. (Currently amended) The method of claim 1, wherein ~~delivering the bi-ventricular pacing therapy~~ pacing the ventricles using the modified pacing timing sequence comprises restoring the ventricular pacing following a premature ventricular contraction.

12. (Currently amended) The method of claim 1, wherein ~~delivering the bi-ventricular pacing therapy~~ pacing the ventricles using the modified pacing timing sequence comprises restoring the ventricular pacing as an intrinsic atrial rate decreases below a maximum tracking rate.

13. (Currently amended) The method of claim 1, wherein ~~delivering the bi-ventricular pacing therapy~~ pacing the ventricles using the modified pacing timing sequence comprises restoring the ventricular pacing.

14. (Withdrawn) The method of claim 1, wherein delivering the bi-ventricular pacing therapy using the modified pacing timing sequence comprises avoiding pacing hysteresis as an intrinsic atrial rate decreases below a maximum tracking rate.

15. (Withdrawn) The method of claim 1, wherein delivering the bi-ventricular pacing therapy using the modified pacing timing sequence comprises pacing below an upper rate limit.

16. (Withdrawn) The method of claim 1, wherein delivering the bi-ventricular pacing therapy using the modified pacing timing sequence comprises implementing a ventricular tracking timing sequence.

17. (Currently amended) The method of claim 1, further comprising:
detecting an intrinsic ventricular depolarization; and
interrupting the bi-ventricular pacing therapy pacing the ventricles using the modified pacing timing sequence if ~~an~~ the intrinsic ventricular depolarization is detected.

18. (Cancelled)

19. (Original) The method or claim 1, wherein avoiding the pacemaker mediated tachycardia comprises:

detecting one or more pacemaker mediated tachycardia events; and
inhibiting atrial tracking based on the detection of the one or more pacemaker mediated tachycardia events.

20. (Withdrawn) The method or claim 1, wherein avoiding the pacemaker mediated tachycardia comprises:

detecting a retrograde p-wave; and

inhibiting initiation of a pacing escape interval based on the detection of the retrograde p-wave.

21. (Currently amended) A cardiac rhythm management system, comprising:
~~a lead system comprising electrodes for electrically coupling to a heart, the electrodes configured to deliver stimulation pulses to right and left ventricles of the heart and to sense electrical activity of the heart; and~~
~~a pulse generator coupled to the lead system, the pulse generator~~ a controller
configured to implement a pacing timing sequence including a post ventricular atrial refractory period (PVARP) associated with a pacing timing sequence, control delivery of a deliver a bi-ventricular ventricular pacing therapy to left and right ventricles using the pacing timing sequence, analyze cardiac signals to detect a disruption of ventricular pacing, modify the pacing timing sequence to restore the ventricular pacing, deliver a bi-ventricular pacing therapy control delivery of pacing to the ventricles using the modified pacing timing sequence, and avoid pacemaker mediated tachycardia ~~during delivery of the bi-ventricular pacing therapy while the ventricles are paced~~ using the modified pacing timing sequence.

22. (Withdrawn) The system of claim 21, wherein the disruption of ventricular pacing comprises one atrial event occurring within the PVARP.

23. (Withdrawn) The system of claim 21, wherein the disruption of ventricular pacing comprises two or more atrial events occurring respectively within two or more successive PVARPs.

24. (Currently amended) The system of claim 21, wherein the disruption of the ventricular pacing comprises an intrinsic ventricular depolarization.

25. (Currently amended) The system of claim 21, wherein the disruption of the ventricular pacing comprises a premature ventricular contraction.

26. (Currently amended) The system of claim 21, wherein the ~~pulse generator~~ controller is configured to modify the pacing timing sequence by adjusting the PVARP.

27. (Currently amended) The system of claim 21, wherein the ~~pulse generator~~ controller is configured to modify the pacing timing sequence by decreasing the PVARP.

28. (Withdrawn) The system of claim 21, wherein the pulse generator is configured to modify the pacing timing sequence by ignoring the PVARP.

29. (Withdrawn) The system of claim 21, wherein the modified pacing timing sequence is configured to avoid pacing hysteresis as an intrinsic atrial rate decreases below a maximum tracking rate.

30. (Currently amended) The system of claim 21, wherein the modified pacing timing sequence is configured to restore the ventricular pacing following a premature ventricular contraction.

31. (Currently amended) The system of claim 21, wherein the modified pacing timing sequence is configured to restore the ventricular pacing following a transient increase in heart rate above a maximum tracking rate.

32. (Currently amended) The system of claim 21, wherein the modified pacing timing sequence is configured to restore the ventricular pacing as an intrinsic atrial rate decreases below a maximum tracking rate.

33. (Withdrawn) The system of claim 21, wherein the modified pacing timing sequence is configured to pace at a rate below an upper rate limit.

34. (Withdrawn) The system of claim 21, wherein the modified pacing timing sequence comprises a ventricular tracking pacing protocol.

35. (Withdrawn) The system of claim 21, wherein the modified pacing timing sequence is configured to avoid pacemaker mediated tachycardia.

36. (Currently amended) A cardiac pacing system, comprising:
means for providing a post ventricular atrial refractory period (PVARP) associated with a pacing timing sequence;
means for delivering a ~~bi-ventricular~~ ventricular pacing therapy to left and right ventricles using the pacing timing sequence;
means for detecting a disruption of ventricular pacing;
means for modifying the pacing timing sequence to restore the ventricular pacing;
means for ~~delivering the bi-ventricular pacing therapy~~ pacing the ventricles using the modified pacing timing sequence; and
means for avoiding pacemaker mediated tachycardia ~~during delivery of the bi-ventricular pacing therapy~~ while pacing the ventricles using the modified pacing timing sequence.

37. (Withdrawn) The system of claim 36, further comprising means for detecting one atrial event occurring within the PVARP.

38. (Original) The system of claim 36, further comprising means for adjusting the PVARP.

39. (Original) The system of claim 36, further comprising means for adjusting the PVARP for two or more successive beats.

40. (Original) The system of claim 36, further comprising means for decreasing the PVARP.

41 – 42. (Cancelled)

43. (Original) The system of claim 36, further comprising means for interrupting the modified pacing sequence if an intrinsic ventricular depolarization is detected during implementation of the modified pacing timing sequence.

44. (Withdrawn) A method for pacing a heart, comprising:
delivering a bi-ventricular pacing therapy using a first pacing timing sequence associated with a post ventricular atrial refractory period (PVARP);
detecting a cardiac event that disrupts consistent ventricular pacing;
adjusting the PVARP;
delivering a modified bi-ventricular pacing therapy using the adjusted PVARP; and
avoiding pacemaker mediated tachycardia during delivery of the modified bi-ventricular pacing therapy.